

## Windbreaks/Shelterbelts for Utah Wildlife Job Sheet

(Supplement to Job Sheet 380)



### Part I. Planning and Design Considerations

***Applicability of practice:*** Windbreaks & shelterbelts are planted on cropland, pastureland, rangeland, along roads, farmsteads, feedlots and even in pivot corners. The diversity of ecological niches and weather protection afforded wildlife by windbreaks/shelterbelts are particularly important in agriculturally dominated landscapes. Windbreaks/shelterbelts provide food, nesting, brooding, loafing, thermal and escape cover for many species of birds and mammals. They can also provide important travel corridors for both migratory and non-migratory species. They are important resting stops for songbirds during spring and fall migration. Over 100 species of birds are known to use windbreaks/shelterbelts as habitat.

#### ***Site considerations:***

- Landowner objectives (types of wildlife use, protection of livestock, buildings, etc.)
- Proximity to available water
- Adjacent landuse (irrigated or non-irrigated, type of crops, grazed, etc.)
- Soil qualities (texture, depth, moisture content)
- Connectivity to other wildlife habitats such as nesting and feeding areas
- Plant hardiness zones; snow drift considerations
- Width of area and ability to accommodate desired wildlife species

***Design considerations:*** The type of vegetation, maintenance regime and configuration of the windbreaks/shelterbelts will vary depending on the wildlife species desired, and the habitat components it will provide (such as food, cover, travel corridor, or access to water source). Generally speaking, wider (multi-row) windbreaks/shelterbelts provide better wildlife cover. Food source species in windbreaks/shelterbelts should be on leeward side. Refer to the vegetation matrix for determining plant species suitable to meet various wildlife objectives. In general, Utah agricultural landscapes suitable for this practice

should strive to connect planted or natural sources of cover (such as shrubby or rangeland areas) and water sources (such as wetlands, streams or ponds). If possible, after trees are established (2-5 years), plant legumes and grasses between row plantings to augment food supply. If the windbreaks/shelterbelts cannot be positioned to connect with these areas, other buffer practices should be considered to provide travel corridors between the windbreak/shelterbelt and other habitats. In areas receiving snow, consideration should be given to prevailing wind and snow drifting. In such cases, an additional row of shrub plantings may be needed (50' to 100') on the windward side of the buffer. For Utah upland game species, a minimum of 2 rows of vegetation should be planted, one fruit-bearing shrub species, and one evergreen species (see vegetation matrix for suggested species). For neotropical migrants, a minimum of 3 rows should be planted: one shrub row, one medium height tree row, and one tall tree row (see vegetation matrix for suggested species).

***Maintenance considerations:*** The amount of maintenance required, and the method used to maintain the vegetation/habitat of the shelterbelt depends on the wildlife use it is expected to provide. Timing of maintenance is critical if nesting or migratory birds use the shelterbelt. Allow dead and dying trees to remain as needed by cavity nesters. Pruning should be discouraged

## Part II Vegetation Matrix

(Matrix under development)

## Part III. Evaluation Guidelines

The following table can be utilized as a planning/evaluation tool. It calculates an index rating for the potential effect on wildlife habitat to compare proposed alternatives. It can be used for evaluating the success of the practice(s) when used several years after establishment.

### EVALUATION MATRIX

	Present	W/Plan	+ years	+ years
Index of Plant Rating (Sum of ratings/# of plants)				
Diversity index				
Interspersion Index				
Indicator species (present or absent?)*				
Other				

\* If indicator species are used it would have to be developed for this practice.

Instructions:

A. **Index of plant rating** is calculated by taking the sum of the plant rating numbers and dividing by the number of plants. This represents the overall rating of the plant community to benefit wildlife.

B. **The diversity index (DI)** is a numerical representation of the value of an area to wildlife based on the change of plant communities within the area. The numerical value is derived by measuring the linear distance of the edge and dividing it by the number of square feet in the area evaluated. Count only edge changes where the strip of vegetation is >10 ft. wide. The following is the formula used to generate the DI:

$$DI = \frac{E}{2 \sqrt{A \times \Pi}} \quad (2 \times (\text{sq. root of area} \times \Pi))$$

Where-

E = Edge (total length in feet) estimated from aerial photos or field observation for the area being evaluated.

A = Area (approx.) expressed in square ft.

$\Pi$  = 3.14

C. **Interspersion Index:** To measure the amount of interspersion of an area count the number of times the habitat or vegetation types change using the following procedure:

1. Obtain an aerial photograph.
2. Count the number of changes along an imaginary north-south line that is drawn across the widest part of the area.
3. Count the number of changes along an imaginary east-west line that is drawn across the widest part of the area.
4. By counting the number of times the lines intersect different habitat or vegetation types and then summing the numbers, you will get an interspersion index value for the area. This value then can be compared over the life of the project or to other sites to determine which sites might be better for the desired wildlife species. The comparisons must be made using the same size areas and map scales. The higher the value, the better for many resident wildlife species and migratory species that establish seasonal territories.

D. **Target species:** These are species the habitat is designed to benefit. There are several methods (use only one method) to choose from to measure this parameter:

1. Presence or absence of the target species
2. A relative change in abundance (example: A 50 % increase in occurrence)
3. Species-specific model(s) (if available) could be used for evaluation.  
NRCS currently has models for the yellow-headed blackbird, muskrat, ferruginous hawk, mule deer and pheasant. USFWS has many models available.

## Part IV. Specifications Sheet

Use specification sheet provided with Windbreak/Shelterbelt Conservation Practice Job Sheet. Include wildlife species desired, and maintenance specifications relevant to the species or assemblage of species. Specification sheet can be obtained from the local NRCS office or can be accessed on the Internet at:

<ftp://ftp.ftw.nrcs.usda.gov/pub/nhcp/jobsheet/380js.pdf>. Other specification sheets can be used at the planner's discretion.

## APPENDIX: UTAH BUFFER JOB SHEETS

## 1. PLANTS THAT PROVIDE HABITAT FOR UTAH BIRDS

SPECIES	VALUE	NESTING	FOOD	HEIGHT
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**GRASS - GRASSLIKE** plants provide ground cover, food, cover near ground for nesting.

Bluegrass, Big	Good	Yes	Yes	1-3'
Canarygrass	Fair	----	Yes	1-6'
Fescue, Hard	Fair	Yes	Yes	.5-2'
Fescue, Idaho	Fair	Yes	Yes	1-3'
Fescue, Sheep	Fair	Yes	Yes	.5-2'
Millet, Foxtail	Good	----	Yes	1-2'
Millet, Japanese	Good	----	Yes	1-3'
Orchardgrass	Fair	Yes	Yes	1-4'
Ricegrass, Indian	Good	Yes	Yes	.5-2'
Wheatgrass, Bluebunch	Fair	Yes	----	1-2'
Wheatgrass, Intermediate	Fair	Yes	----	2-4'
Wheatgrass, Tall	Fair	Yes	----	2-8'
Wildrye, Altai	Good	Yes	----	2-5'
Wildrye, Basin	Good	Yes	----	3-6'
Wildrye, Blue	Good	Yes	----	2-5'
Wildrye, Russian	Fair	Yes	----	1-2'

**FORBS - FLOWERS** provide ground cover and a food supply.

Aster	Fair	----	Yes	1-3'
Buckwheat	Fair	----	Yes	1-2'
Burnet, Small	Good	Yes	Yes	1-3'
Clover species	Good	----	Yes	.5-3'
Columbine	Fair	----	Yes	1-4'
Coral Bells	Fair	----	Yes	1-2'
Coreopsis	Fair	----	Yes	1-3'
Cornflower	Fair	----	Yes	1-2'
Cosmos	Fair	----	Yes	1-3'
Dahlia	Fair	----	Yes	1-5'
Doveweed	Fair	----	Yes	1-6'
Flax, Blue	Fair	----	Yes	1-2'
Filaree	Fair	----	Yes	.5-2'
Hollyhock	Fair	----	Yes	3-8'
Lupine	Fair	----	Yes	1-3'
Marigold	Fair	----	Yes	1-4'
Petunia	Fair	----	Yes	.5-2'
Phlox	Fair	----	Yes	.5-1'
Pinks	Fair	----	Yes	1-2'
Poker Plant	Fair	----	Yes	2-5'
Primrose	Fair	----	Yes	1-6'
Salvia	Fair	----	Yes	1-2'
Sunflower	Fair	----	Yes	1-8'
Zinnia	Fair	----	Yes	1-2'
<b>SPECIES</b>	<b>VALUE</b>	<b>NESTING</b>	<b>FOOD</b>	<b>HEIGHT</b>

**WET AREA Plants**

Bulrush, Alkali	Good	Yes	Yes	2-5'
Bulrush, Hardstem	Good	Yes	Yes	6-10'
Bulrush Threesquare	Good	Yes	Yes	1-3'
Cattail	Fair	Yes	----	6-10'
Pondlily	Fair	----	Yes	Floating
Pondweed	Fair	----	Yes	1-3'
Rush, Baltic	Fair	----	Yes	1-3'
Sedge, Beaked	Fair	----	Yes	1-4'
Sedge, Nebraska	Fair	----	Yes	1-3'
Sedge, Water	Fair	----	Yes	1-3'
Smartweed	Good	----	Yes	1-5'
Spikerush, Creeping	Good	----	Yes	1-3'
Watercress	Fair	----	Yes	.5-1'
Wildrice	Good	Yes	Yes	3-10'

**LOW SHRUBS, and VINES provide nesting sites, food, and cover near ground.**

Bearberry	Good	Yes	Yes	1-3'
Huckleberry	Exc.	Yes	Yes	1-6'
Juniper, Horizontal	Fair	----	Yes	1-6'
Oregon Grape	Fair	----	Yes	1-4'
Sagebrush, Black	Fair	----	Yes	1-3'
Thicket Creeper	Good	Yes	Yes	Vine
Thruppet Vine	Good	----	Yes	Vine
Virginia Creeper	Good	Yes	Yes	Vine
Winterfat	Fair	----	Yes	1-3'

**SHRUBS provide nesting sites, food, and cover near ground.**

Blackberry	Good	Yes	Yes	3-10'
Bitterbrush	Good	----	Yes	3-8'
Buffaloberry	Good	Yes	Yes	5-15'
Caragana	Good	Yes	Yes	10-25'
Cherry Mongolian	Good	Yes	Yes	3-6'
Cherry Nanking	Good	Yes	Yes	6-10'
Chockcherry	Exc.	Yes	Yes	10-25'
Cotoneaster	Fair	----	Yes	8-12'
Currant, Golden	Exc.	Yes	Yes	5-10'
Dogwood	Exc.	Yes	Yes	7-15'
Elderberry	Good	----	Yes	8-15'
Honeysuckle	Good	Yes	Yes	6-15'
Lilac	Fair	Yes	----	10-20'
Mockorange	Fair	Yes	----	6-8'
Plum	Good	Yes	----	5-10'
Pyracantha	Good	Yes	Yes	5-15'
Quince	Fair	----	Yes	5-10'
Rose, Woods	Good	Yes	Yes	2-6'

<b>SPECIES</b>	<b>VALUE</b>	<b>NESTING</b>	<b>FOOD</b>	<b>HEIGHT</b>
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Sagebrush, Basin	Good	Yes	Yes	3-8'
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Sagebrush, Wyoming	Good	Yes	Yes	2-5'
Saltbush, Fourwing	Fair	----	Yes	3-8'
Sandcherry	Good	Yes	Yes	3-6'
Serviceberry	Good	Yes	Yes	5-15'
Silverberry	Good	Yes	Yes	4-9'
Shrubby Cinquefoil	Fair	Yes	----	3-4'
Snowberry	Exc.	Yes	Yes	2-6'
Spirea	Good	Yes	Yes	4-8'
Sumac, Fragrant	Good	Yes	----	3-9'
Sumac, Skunkbush	Exc.	Yes	Yes	3-9'
Sumac, Smooth	Good	Yes	----	5-15'
Sumac, Staghorn	Good	Yes	----	10-15'
Viburnum	Good	----	Yes	6-14'

**SMALL TREES provide nesting and foraging sites, food, canopy and habitat structure.**

Apple	Good	Yes	Yes	15-30'
Apricot	Fair	Yes	Yes	10-15'
Black Cherry	Exc.	Yes	Yes	15-30'
Chockcherry, Amur	Good	Yes	Yes	15-25'
Crabapple	Exc.	Yes	Yes	10-30'
Hawthorn	Good	Yes	Yes	10-25'
Maple, Amur	Fair	Yes	----	15-25'
Maple, Tatarian	Fair	Yes	----	15-25'
Mountain Ash	Fair	----	Yes	20-30'
Mulberry	Fair	Yes	Yes	15-30'
Pear, Harbin	Fair	----	Yes	15-30'
Russian Olive	Exc.	Yes	Yes	15-30'

**MEDIUM TO TALL TREES provide nesting and foraging sites, food, canopy and habitat.**

Alder	Good	Yes	Yes	30-60'
Ash, Green	Fair	Yes	Yes	30-60'
Aspen, Quaking	Fair	----	Yes	25-60'
Birch	Fair	----	Yes	30-60'
Boxelder	Fair	----	Yes	30-60'
Cottonwood	Fair	----	Yes	40-120'
Elm	Good	----	Yes	25-65'
Hackberry	Exc.	Yes	Yes	30-60'
Locust, Black	Fair	----	Yes	30-60'
Locust, Honey	Fair	----	Yes	30-50'
Maple	Good	Yes	Yes	30-65'
Oak, Bur	Exc.	Yes	Yes	40-70'
Oak, Mongolian	Exc.	Yes	Yes	30-50'
Poplar species	Fair	----	Yes	40-60'
Walnut, Black	Good	Yes	Yes	30-60'
Willow, Golden	Good	Yes	Yes	30-60'
Willow, Laurel	Good	Yes	Yes	25-40'
Willow, Pacific	Good	Yes	Yes	25-40'
<b>SPECIES</b>	<b>VALUE</b>	<b>NESTING</b>	<b>FOOD</b>	<b>HEIGHT</b>

**CONIFERS provide excellent winter cover, food and nesting sites.**

Arborvitae	Good	Yes	Yes	10-40'
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Douglas Fir	Fair	Yes	Yes	25-70'
Eastern Redcedar	Exc.	Yes	Yes	25-50'
Juniper, Rocky Mtn.	Exc.	Yes	Yes	20-40'
Pine, Mugo	Fair	Yes	----	5-20'
Pine, Ponderosa	Exc.	Yes	Yes	30-70'
Pine, Austrian	Good	Yes	Yes	25-50'
Pine, Scotch	Fair	Yes	----	25-50'
Spruce	Good	Yes	----	30-80'

## **2. ADDITIONAL REFERENCES AVAILABLE THROUGH UTAH STATE OFFICE**

1951. Martin, A. C., Zim, H.S., and Nelson, A.L. American Wildlife and Plants: A Guide to Wildlife Food Habits. A wildlife classic that ranks plants according to their value for groups of wildlife (e.g., water birds, song birds). Plants are listed by common name.

1982. Plant Use Guide for Wildlife. Soil Conservation Service. Somewhat dated information about suppliers, wildlife species utilization of common plants, and site characteristics. May be especially useful for windbreaks and field borders.

1993. Mule Deer Habitat Suitability Model. Soil Conservation Service. Unpublished draft HSM, but has extensive plant list (both scientific and common names) for mule deer.

1996. Krausman, P.R. (editor). Rangeland Wildlife. Relatively up-to-date reference, mostly for upland wildlife.

## **3. USEFUL WEBSITES**

<http://www.nr.state.ut.us/dwr/notebook.htm>

<http://www.utahcdc.usu.edu/ucdc>

<http://www.ms.nrcs.usda.gov/whmi/technotes.htm>

<http://www.wcc.nrcs.usda.gov/watershed/products.html>

<http://plants.usda.gov/plants/index.html>

<http://waterhome.brc.tamus.edu/NRCSdata/models/rangecal/>

<http://Plant-Materials.nrcs.usda.gov/>



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Additional information is available from your local NRCS office, Utah State Cooperative Extension Service, Utah Division of Wildlife Resources, and various conservation organizations.

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